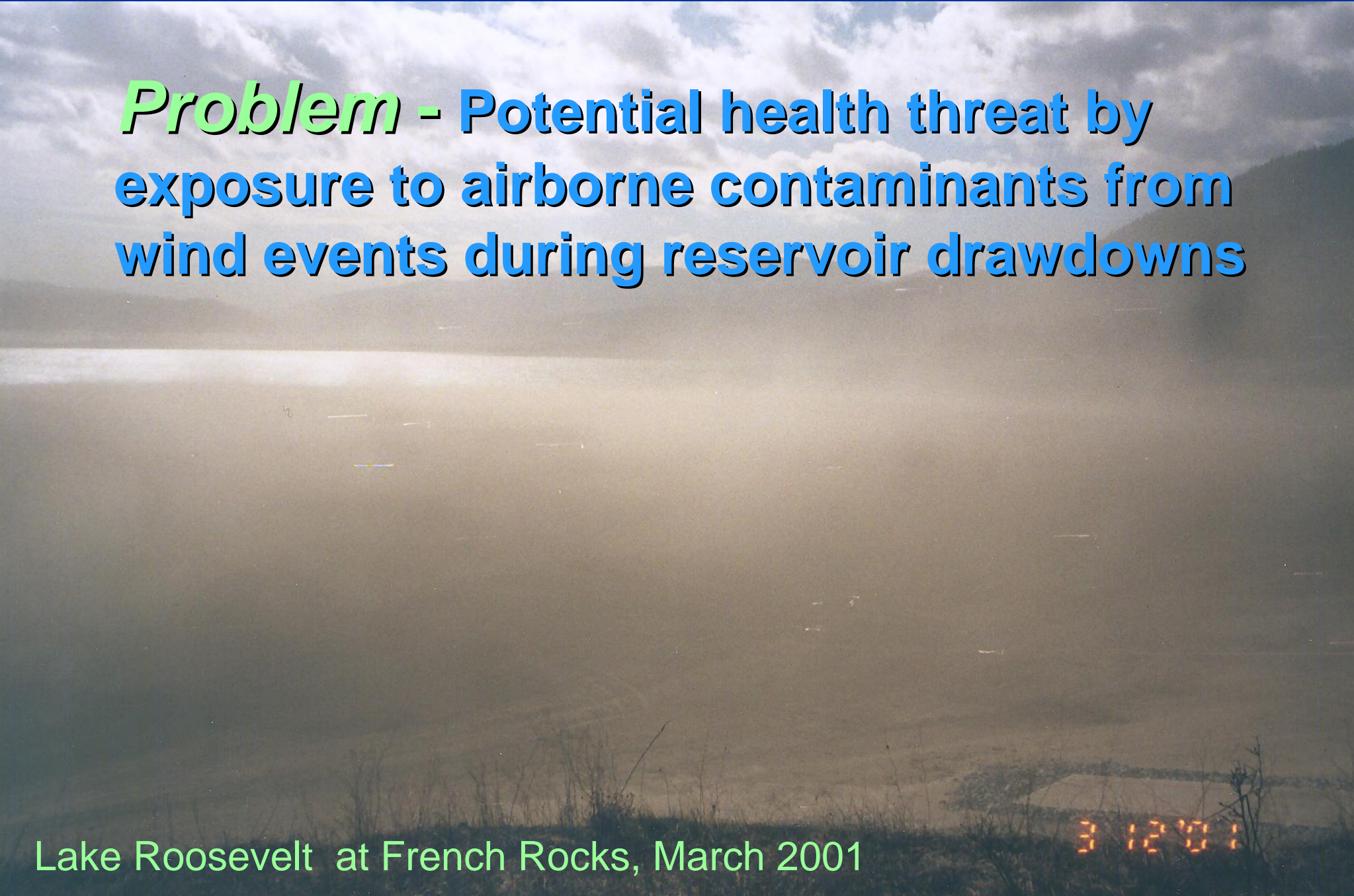


Trace Elements in Air at Lake Roosevelt

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U.S. Geological Survey

Presented at
Lake Roosevelt Natural Resources Managers Meeting
Davenport, WA

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***Problem* - Potential health threat by exposure to airborne contaminants from wind events during reservoir drawdowns**

Lake Roosevelt at French Rocks, March 2001

Objectives

- **Part I** (Majewski and others, 2003, USGS WRIR 03-4170)
 - Determine the concentrations of trace elements in the fine-grained fraction of exposed beach, bed, and bank sediments from Grand Coulee Dam to the Canadian border
- **Part II (Air sampling)**
 - Determine concentrations of trace elements in airborne dust during ambient and dust-event conditions
 - Determine if exposed beach and bed sediments are the source of the airborne trace elements

Part II - Air Sampling

- **To coincide with significant Lake draw-down events**
 - Winter - January through June
 - Fall - ~September
- **PM10 Sampling - EPA Method IO-2.1**
 - Every 6th day during season - Coordinated with SCAPCA air sampling program
 - Sampling began in January, 2002
- **Dust events**

Air Sampling

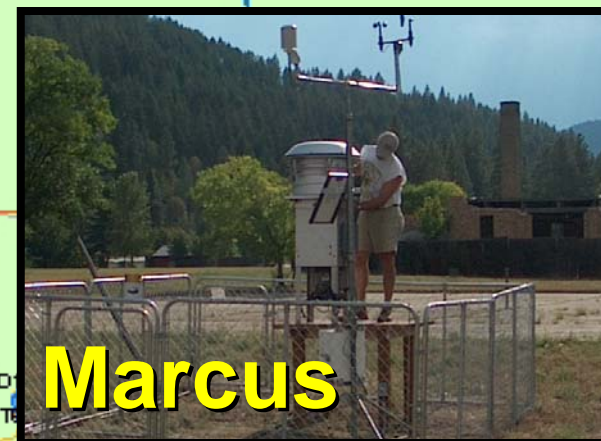
- **PM10 High Volume Air Samplers**

- 24 h samples
- Quartz-fiber Filters
- Every 6th day
- High Wind Events

- **Meteorological Station at Each Site**

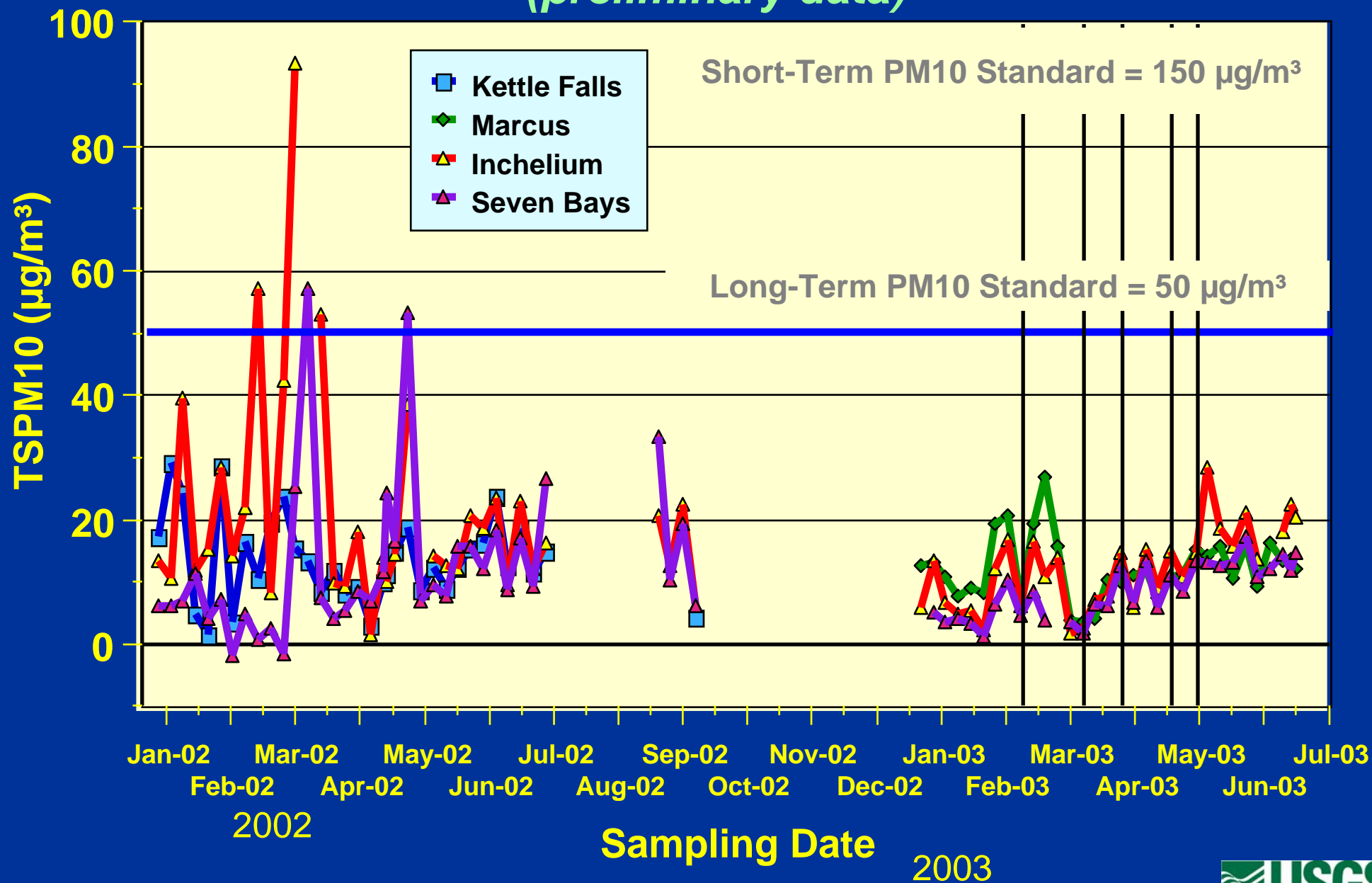
- **Analytical**

- 42 Trace elements, same suite as analyzed for in 2001 bed sediment survey, except mercury



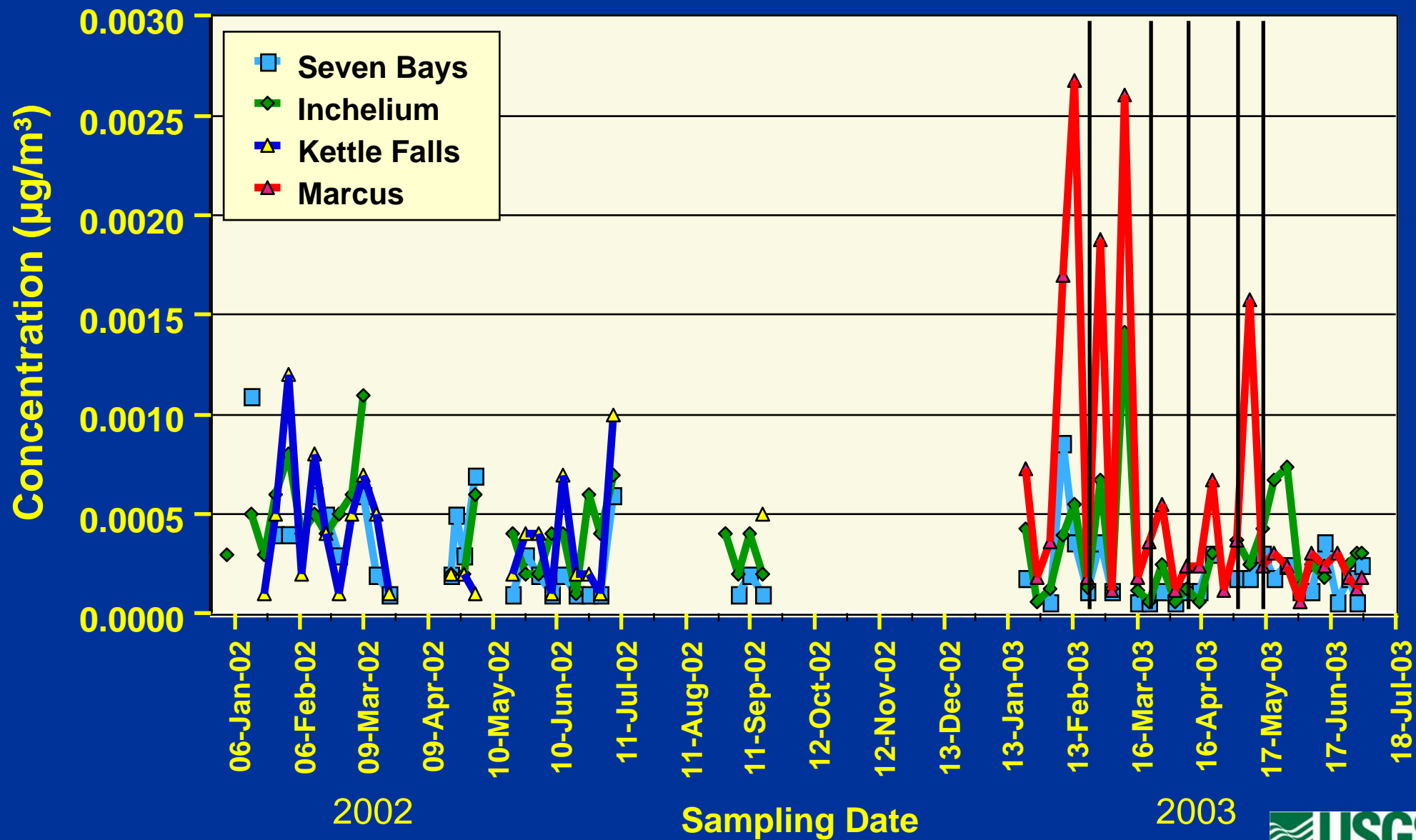
Total Suspended PM 10

(preliminary data)



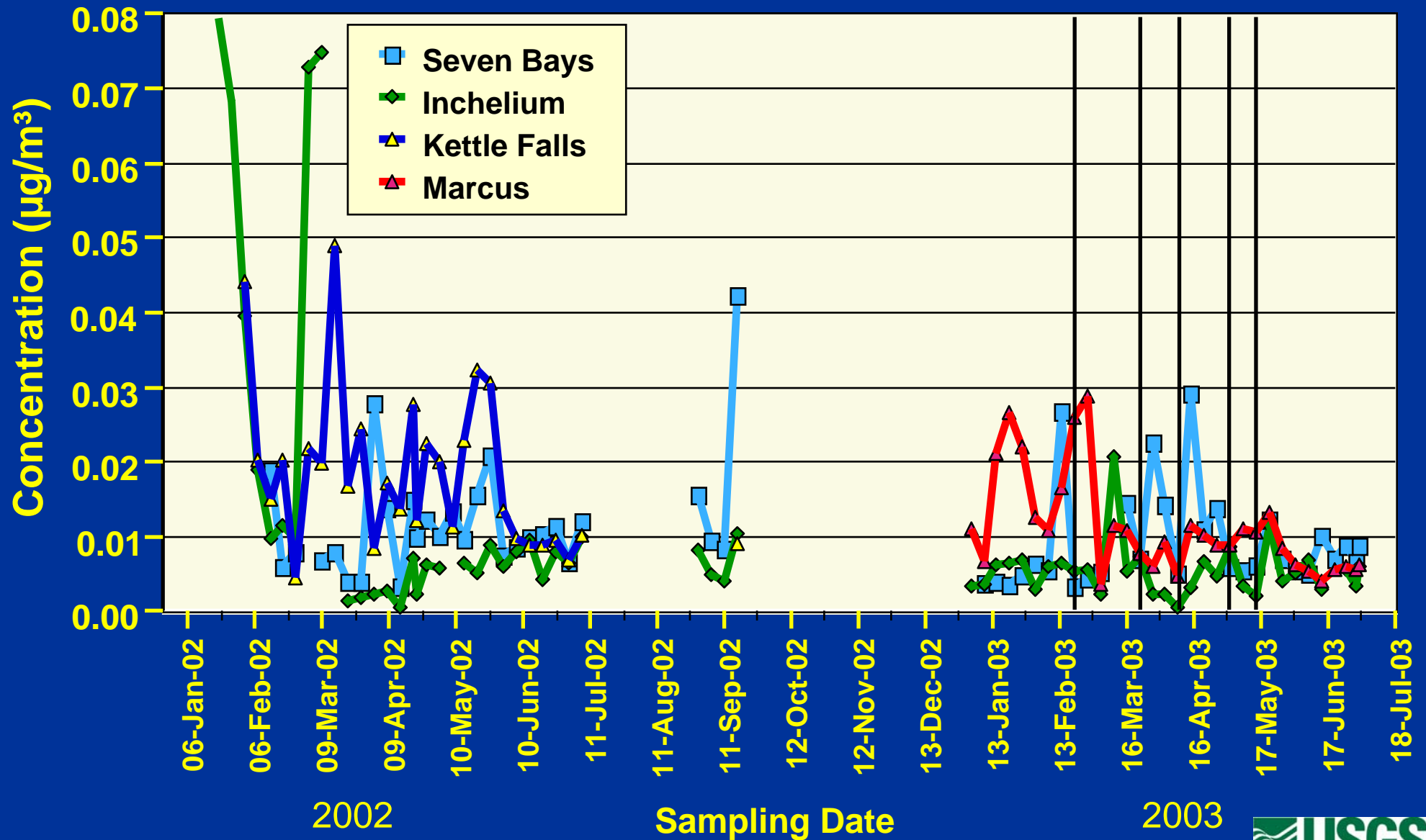
Arsenic

(preliminary data)



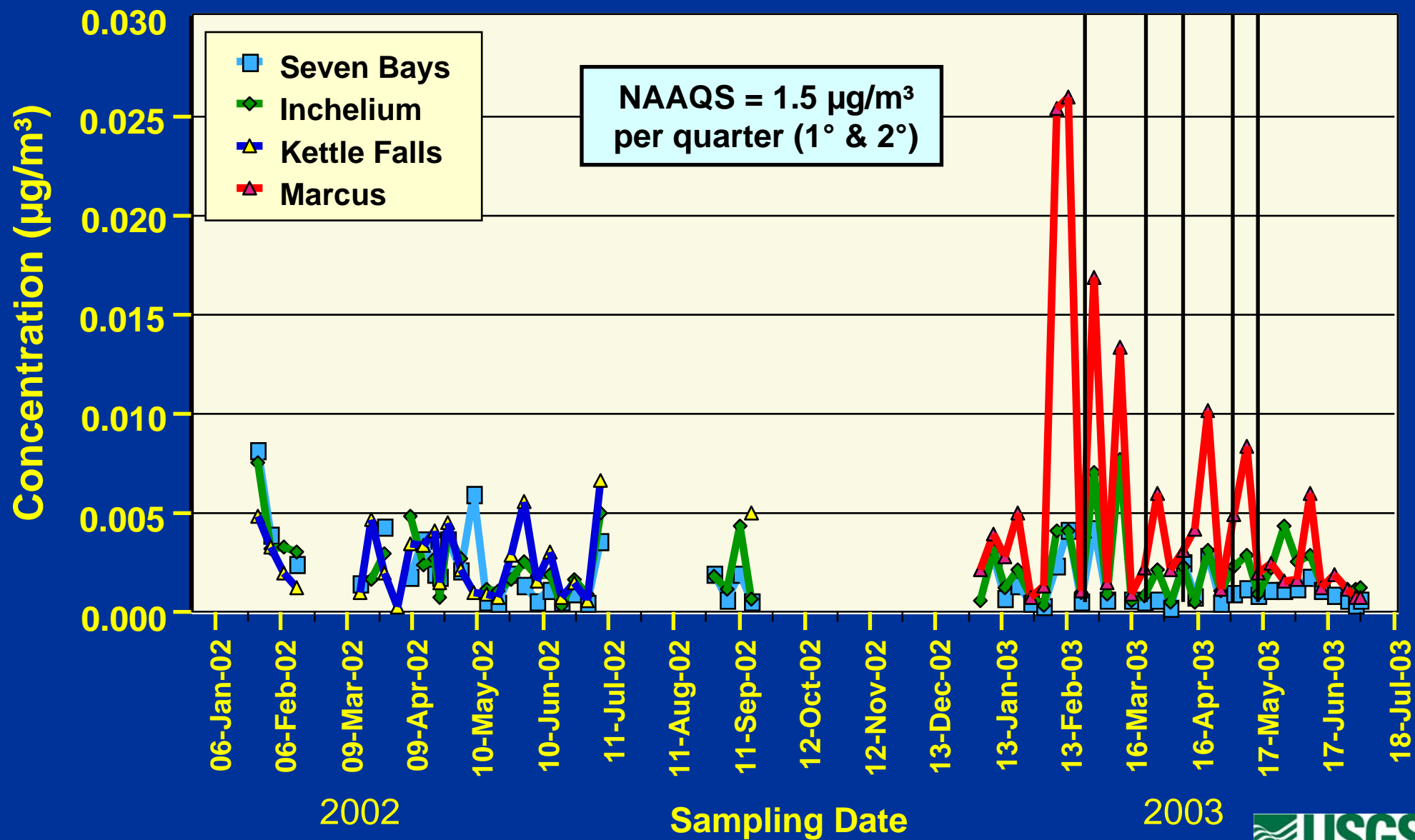
Copper

(preliminary data)



Lead

(preliminary data)



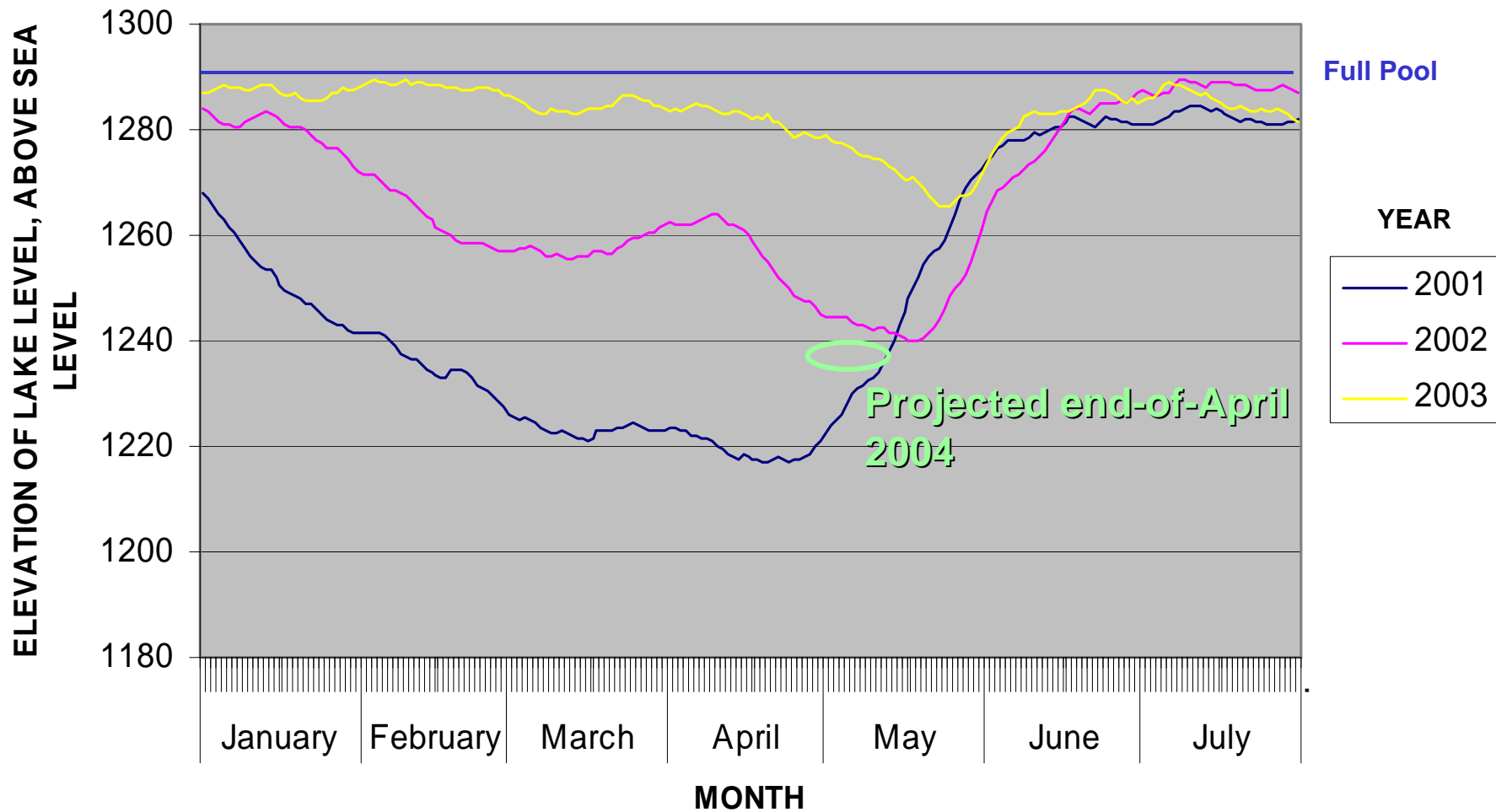
2002-2003 Air Monitoring Summary

- Operated from January through June, and September
- TSPM10 concentrations did not exceed the Short-Term Standard of $150 \mu\text{g}/\text{m}^3$ or the Long-Term Standard of $50 \mu\text{g}/\text{m}^3$
- Air Concentrations of slag related trace elements were low
 - Lake levels in '02 and '03 were not low
 - Number of significant dust events was low

2004 Sampling

- **Focus sampling to periods when bed sediments are exposed**
 - **Sample every 12th day in January and February**
 - **Sample every 6th day from March to mid-April**
 - **sample every 3rd day from mid-April to early June**

Water-surface elevation of FDR Lake at Grand Coulee Dam (USGS gage 12436000)



Contacts

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